

App. No. 09/995,933

Amendment under 37 CFR §1.111

REMARKS

Claims 1-2, 4, 9-10, and 12 remain pending in the application. Claims 1 and 9 are independent claims. Claims 1-2, 4, 9-10, and 12 have been amended and Claims 3, 5-8, 11, and 13-16 have been cancelled. Reexamination and reconsideration of the application, as amended, are respectfully requested.

Acceptance of the drawings submitted on 06/06/2003 is hereby acknowledged.

Examiner has rejected Claims 1-2, 4-10, and 12-16 under 35 USC §103 as being unpatentable over Keitoku (US5036188) in view of Crimmins (US5103108) and Harwood (GB1500495A). Examiner has rejected Claims 3 and 11 under 35 USC §103 as being unpatentable over Keitoku (US5036188) in view of Crimmins (US5103108), Harwood (GB1500495A), and either of Haddock (US4912880) and Takahashi (US4921330).

The rejections are overcome since it is believed that Claims 1-2, 4, 9-10, and 12, as amended, patentably distinguish over Keitoku, Crimmins, Harwood, Haddock, and Takahashi, for the reasons set forth hereinbelow.

Examiner has stated (regarding Claims 1-2, 4-10, and 12-16):

Crimmins teaches a hemispheric lens 162 for receiving and detecting infrared wavelength, made of acrylic plastic with an adhesive layer for securing it to the face of the device (column 6, lines 50-55) as well as a hemispheric lens (190) having a substantially hemispheric concave inner and convex outer surface and having a substantially flat annular surface connecting the inner and outer surfaces [of the] lens.

Applicant respectfully submits that no one skilled in the art could have combined the teachings of Crimmins with the teachings of the other references relied on to arrive at the claimed invention. In particular, neither Crimmins nor any of the other references relied on disclose an element corresponding to the "a hemispheric lens ... comprising a lens body ... having a substantially hemispheric convex outer surface, a substantially hemispheric concave inner surface, a substantially flat annular surface connecting the inner and outer hemispheric surfaces..." as recited in Claims 1 and 9.

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The lens 162 of Crimmins is a spherical ball lens, not a hemispherical lens (column 6 lines 50-55; Fig. 8). It does not possess a concave inner surface or an annular surface as recited in Claims 1 and 9, therefore, the combination of lens 162 of Crimmins with the teachings of the other references relied on does not disclose all elements and limitations of Claims 1 and 9. Since a spherical ball lens and a hemispherical lens having convex and concave surfaces exhibit very different optical properties, no one skilled in the art would be motivated by the disclosure of a spherical ball lens in Crimmins to use a hemispherical lens in its place. Furthermore, lens 162 is not suitable mechanically for mounting on the front face of a retail electronic entertainment device; altering lens 162 to make it thus mechanically suitable would alter its optical properties and render it unsuitable for its intended function. No one skilled in the art could combine the spherical lens 162 of Crimmins with elements taught by Keitoku and the other references relied on to arrive at the claimed invention.

Element 190 of Crimmins, characterized by the Examiner as a lens, does not in fact function as a lens in the device of Crimmins. It is merely a substantially transparent protective cover or enclosure (column 7 lines 18, 21-22, and 29-30), and happens to have a convex outer surface and a concave inner surface, but it serves no disclosed optical function. The similarity of mechanical shape notwithstanding, no one skilled in the art would be motivated by the disclosure of a hemispherical protective cover in Crimmins to use a hemispherical lens as recited in Claims 1 and 9 for increasing an optical acceptance angle. The combination of cover 190 with the other cited prior art references therefore does not teach or suggest all elements and limitations of Claims 1 and 9. No one skilled in the art could combine the cover 190 of Crimmins with elements taught by Keitoku and the other references relied on to arrive at the claimed invention.

Crimmins does disclose a hemispherical lens 188, but this lens does not include a concave inner surface as recited in Claims 1 and 9; lens 188 is a plano-convex hemispherical lens. Since a plano-convex hemispherical lens and a hemispherical lens having convex and concave surfaces exhibit very different optical properties, no one skilled in the art would be motivated by the disclosure of a plano-convex hemispherical lens in Crimmins to use a hemispherical lens as recited in Claim 1 and 9. Since cover 190 serves no optical function, no one skilled in the art would be motivated to alter lens

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188 to include a concave inner surface like that of cover 190. Furthermore, modification of lens 188 to include a concave inner surface would be contrary to the teachings of Crimmins, which calls for the planar surface of lens 188 to be directly bonded to diodes so as to eliminate air interfaces (column 7 lines 14-17). Therefore, the combination of lens 188 of Crimmins with the other cited prior art references does not teach all elements and limitations of Claims 1 and 9, nor is there any motivation or suggestion to alter the references to meet the limitations of Claim 1 and 9. No one skilled in the art could combine the hemispherical lens 188 of Crimmins with the elements taught by Keitoku and the other references relied on to arrive at the claimed invention.

In view of the forgoing, Applicant respectfully submits that any rejection of Claims 1 and 9 under 35 USC §103 that relies on Crimmins for teaching a hemispheric lens with concave inner and convex outer surfaces, in combination with the other references relied on, is improper, and should be withdrawn.

Examiner has stated (regarding Claims 3 and 11):

Keitoku, in view of Crimmins and Harwood, as applied to Claims 1 and 9 above discloses the claimed invention except for the adhesive layer comprising double-sided adhesive tape. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use double-sided adhesive tape to secure a hemispheric lens of Keitoku in view of Crimmins and Harwood, as applied to Claims 1 and 9 above, because the lens and face would have to be secured to one another in some way and double-sided adhesive tape is a well known structure for connecting optical elements, the patents to Haddock et al ... and Takahashi ... being merely illustrative in that regard.

Applicant respectfully submits that no one skilled in the art would have combined the teachings of Haddock or Takahashi with those of Keitoku, Crimmins, and Harwood to arrive at the claimed invention. Note that independent Claims 1 and 9 have been amended recite the double-sided adhesive tape previously recited in cancelled claims 3 and 11.

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Applicant respectfully submits that securing any element taught by Crimmins and accurately characterized as a lens (lens 162 and lens 188) using double-sided adhesive tape as taught by Haddock or Takahashi, is taught away from by Crimmins, or would render the those elements of Crimmins inoperative (*In re Gordon*, 733 F.2d 900, 221 USPQ 1125). Lens 162 of Crimmins (a spherical ball lens) is disclosed as being secured by transparent index-matched epoxy so as to enhance infrared light capturing ability (column 6 lines 48-55). No one skilled in the art would replace such epoxy with double-sided adhesive tape, which would have the effect of reducing or eliminating infrared light capturing ability. Reducing such light capturing ability is taught away from by Crimmins; eliminating such light capturing ability would render the device of Crimmins inoperative. Similarly, lens 188 of Crimmins is disclosed as being secured with a suitably transparent and index-matched adhesive (column 7 lines 14-17). No one skilled in the art would replace such adhesive with double-sided adhesive tape, for the reasons given above. Any rejection of a claim under 35 USC §103 based on combining teachings of Keitoku, Crimmins, and Harwood with Haddock or Takahashi is therefore improper and should be withdrawn.

Examiner has stated (regarding Claims 1-2, 4-10, and 12-16):

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the lens of Keitoku from a transparent dielectric material, in particular acrylic plastic, and have a substantially hemispheric concave inner and convex outer surface with a substantially flat annular surface connecting the inner and outer surfaces [of the] lens as well as an adhesive layer for securing the lens to the face of the device, as suggested by Crimmins, to provide cost savings by using reduced amounts of less expensive materials. Furthermore, it would have been obvious to use a 1/2-inch exterior, 3/8-inch interior diameter lens because those values lie well within the small range one would expect to be associated with the structures of the type of Keitoku and Crimmins and such devices would operate in the same manner regardless of size.

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Applicant respectfully submits that "cost savings by using reduced amounts of ... materials" would not motivate one of ordinary skill in the art to use a hemispheric lens with concave inner and convex outer surfaces. The shapes of the surfaces of the lens are chosen on the basis of the optical properties provided. As already stated hereinabove, none of the references relied on, alone or in combination, discloses a lens providing the optical functionality of the hemispheric lens with concave inner and convex outer surfaces, as recited in Claims 1 and 9.

Applicant further respectfully submits that in general, lenses do not "operate in the same manner regardless of size". Examiner's attention is drawn to the fact that the focusing properties a lens vary with the radii of curvature of its surfaces. While the specification of the instant application teaches that various suitable radii may be chosen for increasing the acceptance angle of an infrared receiver, it also teaches that a preferred size is an inner radius of 3/8-inch and an outer radius of 1/2-inch. The preferred inner radius is disclosed as selected based on the typical size of the receiver, but the preferred outer radius is then chosen to yield the desired optical properties (Fig. 5 and ¶[0032]). The references relied on are silent as to the proper choice of radii (or combination of radii) of the lens surfaces for achieving a desired increase of acceptance angle. Since there is no teaching, suggestion, or motivation in the references for choosing the radii recited in Claims 4 and 12, any rejection under 35 USC §103 is improper, and should be withdrawn.

In view of the above, it is submitted that Claims 1-2, 4, 9-10, and 12 are in condition for allowance. Reconsideration of the rejections is respectfully requested. Allowance of Claims 1-2, 4, 9-10, and 12 at an early date is earnestly solicited.

Respectfully submitted,



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